REMARKS

This is in response to the Office action dated 4/20/2004 objecting to the drawings, and objecting to claim 48 under USC 112, and objecting to claims 28 and 41 as being dependent upon a rejected base claim, and rejecting claims 1 – 27, 29 - 40 and 42 – 54. More specifically, the Office action rejected claims 1 – 4, 23, 24, 26, 27, 32 – 34, 39, 40, and 45 - 54 under 35 USC 102 as being anticipated by McAulay et al U. S. Patent No. 5,663,799, and rejected claims 5 –22, 25, 29 – 31, 35 -38, and 42 - 44 as being as being unpatentable over McAulay in further view of Boles et al U. S. Patent No. 6,137,896.

In response to the objection to the drawings, new corrected drawings are submitted in this application that are not hand-drawn, as requested by the Office action. Therefore, the Applicant believes the objections to the drawings to be overcome.

In response to the rejection to claim 48 under 35 USC 112, the term "uv", is explained with reference to Figure 4. The terms u and v denote the spatial frequency axes of the frequency spaces 404 and 454 of Fig. 4. The frequency responses 406 and 456 depicted therein are graphical depictions of uv data, e. g. graphical depictions of the at least a portion of the frequency responses of images 402 and 452 respectively. The frequency responses 406 and 456 mapped in the frequency spaces 404 and 454 are the second intensity images wherein the orientation is found, as further described in the specification at page 9, line 11 – page 11, line 2. Given the specification, claim 48, and this above explanation, the Applicant believes the objection under 35 USC 112 to be overcome.

Turning to the 102 rejection to the claims over McAulay, McAulay is an optical diffraction method for lead inspection. McAulay takes an object 112 with leads 113 and passes it through a system unit 121 that has a slot 115 like a credit card reader. Using the substantially known orientation of the object 112 and leads 113, McAulay places the leads 113 ideally so that the lead length is perpendicular to the direction of motion of the leads 113 represented by the arrow 122, and passes the leads 113 along the slot in a direction represented by the arrow 122. The light passes through the leads 113 and is detected by the photo detector 110. See column 7. McAulay states that a plain wave of coherent light passing through a periodic structure, such as leads, that has a non-periodic portion, such as a missing leads, produces constructive and destructive interference fringes, see generally

McAulay columns 4, lines 65 – 68. Images containing constructive and destructive interference fringes are depicted at Figs. 3B, 4B and 5B. If the periodic structure, i.e., the pitch or grating, is not regularly spaced, then the constructive and destructive interference fringes start to add together at ¼ the self imaging distance and show up as large changes in electronic output, which is shown on Figs 3C, 4C and 5C. The large change in electronic output indicates some problem with the leads.

Claim 1 is a method for finding the orientation of an object. In claim 1, initially the orientation of the object is unknown.

Contrastingly, in McAulay the orientation of the object is known. Unlike claim 1, McAulay does not teach finding the orientation of the object 112. For McAulay to work, McAulay must already know the orientation of the object 112 sufficiently to pass the leads 113 through the slot 115 in the direction of the arrow 122 without breaking the leads 113. Otherwise, the leads 113 of the object would be damaged. McAulay is given the orientation of the object. In contrast, Claim 1 is trying to determine the orientation of an object from an image of an object where the orientation is unknown. In an inspection application, Applicant's claim 1 would be input to the teaching of McAulay. For instance, the orientation determined by claim 1 could be used by a robotic arm to pick up the part 113 of McAulay after imaging the part 113 and pass it through the slot.

Further, McAulay is not concerned with the angle of the object. McAulay mentions sine and cosine terms in columns 3 and 4 to explain why the constructive and destructive interference fringes start to add together at the ¼ the self imaging distance when the pitch or grating is not regularly spaced, and that the additions show up as large changes in electronic output, shown on Figs 3C, 4C and 5C. However, there is no relationship between these angles and the angle of the object that is expressly recited in claim 1.

Furthermore, McAulay also does not determine the orientation of the leads 113. McAulay determines *shift* of leads, "A differential (maximum minus minimum) variation of almost 50% indicates that a signal can be developed with a percentage change comparable to the percentage *shift* in lead deformation." Emphasis added, see McAulay column 8, line 63 – column 9, line 1. Orientation of the leads cannot be determined from

the signal of McAulay. The signal of McAulay does not contain enough two-dimensional information necessary to determine an orientation, such as angle.

information necessary to determine an orientation, such as angle.

Moreover, McAulay's lack of concern with teaching and/or finding orientation is further evidenced by noting that McAulay will work even if the leads are slightly rotated, (as long as they are not rotated too much so that they will not pass through the slot undamaged). The pattern of the leads is what McAulay leverages. If the pattern of the leads is slightly rotated, the response to the pattern is still present, and thus McAulay's signals should still be generated.

As shown above, McAulay does not determine the orientation of an object or leads, nor does McAulay does teach how to gather or infer enough two-dimensional information to determine orientation. In contrast, Claim 1 is about determining an orientation of any object. McAulay and claim 1 are not disclosing the same thing. Thus, McAulay cannot be said to anticipate the method of claim 1, and thus, the rejection to claim 1 under 102 as being anticipated by McAulay is deemed to be overcome.

Independent claims 23, 32 and 39 recite the same limitation, .i .e. determine an orientation. Therefore for the same reasons given above, McAulay does not anticipate claims 23, 32 and 39, and thus, the rejections to claim 23, 32 and 39 under 102 as being anticipated by McAulay are deemed to be overcome.

With regard to claims 2 – 4, 24, 26, 27, 33 – 34, 40, and 45 - 54 they depend from claims 1, 23, 32 and 39, respectively, and therefore are likewise not anticipated by McAulay. Therefore, the rejections to dependent claims 2 – 4, 24, 26, 27, 33 – 34, 40, and 45 – 54 under 102 as being unpatentable over McAulay are deemed to be overcome.

Second, the Office action rejected claims 5 –22, 25, 29 – 31, 35 -38, and 42 - 44 as being as being unpatentable over McAulay in further view of Boles. As claims 5 –22, 25, 29 – 31, 35 -38, and 42 - 44 depend from claim 1, 23, 32, and 39 which claims applicant deems allowable, claims 5 –22, 25, 29 – 31, 35 -38, and 42 - 44 are likewise allowable and the Office action rejection to those claims under 35 USC 103 as being unpatentable over McAulay in further view of Boles is deemed moot, and thus, overcome.

Accordingly, Applicant respectfully requests allowance of claims 1 - 54. The Examiner is invited to telephone the undersigned attorney to further the prosecution of this application.

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Attachments